RESEARCH HIGHLIGHTS

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THE IMPACT OF THE 1988 BASEL CAPITAL ACCORD AND PROGNOSIS FOR THE FUTURE

INTRODUCTION

In May 2003, Canada Mortgage and Housing Corporation (CMHC) engaged Dr. Linda Allen, Professor of Finance at the Zicklin School of Business, Baruch College of the City University of New York, to complete a comprehensive literature review on the impacts of the 1988 Basel Capital Accord (thereafter called Basel 1988).

Basel 1988 sets out an agreement among the G-10 central banks to apply common minimum capital standards to their banking industries. These standards are primarily related to credit risk; a main risk faced by banks. Basel 1988 was fully implemented by year-end 1992.

In developing a single, international risk-adjusted capital standard, Basel 1988 is designed to level the playing field and promote worldwide adoption of best practices to enhance the efficiency, productivity, safety and soundness of the global financial system.

This literature review will help establish a baseline for understanding the potential impacts of the proposed revisions to Basel 1988 (thereafter called Basel II) on the capital market in general, and on the housing finance sector in particular. Finalization of Basel II is underway.

Scope of Review

The research consists of a comprehensive review of over two hundred papers focusing on the impact of Basel 1988. Of the twenty-three potential impacts which served as the basis for conducting the review, it is possible to address ten through the available literature. These are segmented into mortgage market and general market impacts.

Mortgage Market Impacts

The review summarizes the available literature on the following mortgage market impacts arising from Basel 1988:

- supply of mortgages to the borrower;
- profitability of mortgages to the lender;
- the way in which mortgage risks is assessed and managed;
- capital arbitrage between mortgage and non-mortgage lending; and
- government-backed and non-government-backed mortgage securitization and other off-balance-sheet vehicles.

However, there is no available literature on the following mortgage market impacts arising from Basel 1988:

- competitiveness of mortgages relative to other types of lending;
- competitiveness of mortgages by the level of required capital;
- competitiveness of mortgage lenders by size of operation;
- cost of funding mortgages, including the use of transfer pricing;
- terms and conditions, and cost of mortgages to the borrower; and
- supply and affordability of housing.

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General Market Impacts

The review summarizes the available literature on the following general market impacts arising from Basel 1988:

- strength and stability of financial institutions;
- allocation of capital;
- cyclicality of the economy;
- industry profitability and competitiveness; and
- reshaping the playing field of financial institutions competing off-shore.

No literature is available however, on the following general market impacts arising from Basel 1988:

- competitive inequality amongst banks operating off-shore;
- economy of scale and economy of scope of financial institutions;
- convergence of financial services;
- mergers amongst financial institutions;
- industry efficiency and innovation;
- reshaping the playing field of financial institutions competing at home; and
- competition between institutional and non-institutional lenders.

RATIONALE

The Basel 1988 process produced many successes, but also several important failures and unintended consequences. Loopholes in the regulations were exploited by banks through a process known as regulatory capital arbitrage. The exclusion of market risk from the capital requirements induced banks to shift their risk exposure from priced credit risk to unpriced market risk. This loophole was filled by the Market Risk Amendment of 1996, which imposed a capital charge for market risk exposure.

Compromises in Basel 1988 made it necessary in 2001, to propose new regulations (Basel II) to address the original regulations' unintended consequences. For example, the failure to differentiate between high quality and low quality commercial credits contributed to a steady increase, over the past decade, in the credit risk of bank loan portfolios. Basel II proposes to stem this deterioration in bank credit quality by imposing rigorous new credit risk measurement techniques on the Basel 1988 framework. Banks will therefore, hold capital as a cushion against credit risk exposure as measured by either external credit rating agencies, or by internal value at risk models designed to accurately measure credit exposure.

Another omission in Basel 1988 is the neglect of operational risk in the capital requirements. Basel II proposes to rectify this by including several models of operational risk measurement in the proposals.

KEY FINDINGS

The variety of literature on this topic indicates significant support for regulation in general, and Basel 1988 in particular. Such regulations have had a major impact on general financial market conditions, as well as on the mortgage market itself. The main source of contention appears to be in determining just how much, and in precisely which way, such regulation impacts financial markets and institutions.

The following key findings are based on the impacts most frequently discussed in the literature.

Mortgage Market Impacts

Supply of mortgages to the borrower

- Well capitalized banks increase their mortgage lending more than poorly capitalized banks decrease their lending. This result is not consistent with a Basel-induced credit crunch. It is also observed that Basel capital regulations do not constrain bank lending behavior as much as the self-imposed economic capital (risk based capital) targets set by the banks;
- Based on US statewide data, there was a significant decrease in real estate lending by capital-constrained banks. Banking sector retrenchment during the implementation of Basel 1988 therefore, had a real impact on economic activity in the real estate sector and may have contributed to a credit crunch;
- Based on data from 15 emerging countries, the introduction of Basel 1988 caused credit to contract. This aggregate credit contraction was exacerbated in countries that either strictly enforced the Basel 1988 capital requirements, or concurrently experienced currency or financial crises. Retrenchment in the supply of bank loans, and underdeveloped alternate sources of financing are also likely to have had detrimental impacts on the aggregate level of real economic activity in emerging markets.

The way in which mortgage risk is assessed and managed

- Basel 1988 did not adequately measure credit risk in the mortgage market. There is no adjustment in risk weight for the loan-to-value ratio (LTV) or the existence of mortgage insurance. Thus, Basel 1988 created a disincentive for banks to purchase mortgage insurance and instead encouraged the issuance of high LTV, uninsured mortgages. This may explain the growth of the jumbo mortgage market in the post Basel 1988 years;
- Several European countries adopted mortgage limitations that were more restrictive than Basel 1988. In contrast, Anglo-Saxon countries, such as Australia, the UK and the US, utilize market value appraisals to determine the mortgage's LTV. These lending limitations have been effective in preventing losses during cyclical downturns in real estate values.

Capital Arbitrage Between Mortgage and Non-Mortgage Lending

- Banks have regulatory capital arbitrage mechanisms to circumvent the intent of Basel 1988 to increase capital requirements as risk exposure increases. Some common technique includes the use of securitization to concentrate and transfer credit risk;
- Although the potential impact of regulatory capital arbitrage is extensive, such arbitrage may not be undesirable if it permits banks to correct excess capital requirements. If banks could not avoid these excessive capital regulations through regulatory capital arbitrage, they would have no choice but to exit relatively low-risk businesses (e.g. mortgages), thereby increasing the overall risk level of the banking system;
- One motivation behind asset securitization has been capital arbitrage. If there is a gap between economic and regulatory capital, banks can use securitization to adjust their risk/regulatory capital positions. For example, if regulatory capital requirements are perceived to be onerous, the bank will raise its risk profile in ways that do not trigger additional capital requirements;
- In 1992 (the year of full implementation of Basel 1988 in both the US and Canada), the issuance of collateralized mortgage obligations (CMOs) exceeded $80 billion in the US as compared to $20 million in 1988. This fourfold increase is linked to the capital constraints imposed by Basel 1988 and the ways banks sought to economize on their capital costs.

Government-backed and non-government-backed mortgage securitization and other off-balance-sheet vehicles

- The changes in bank capital requirements did not consistently impact the speed of adoption of off-balance sheet activities by banks;
- Shortly after full implementation, the impact of Basel 1988 on banks was to increase the relative return to securitization by increasing the relative cost of holding assets on the balance sheet. Non-bank financial institutions, such as captive finance companies engaging in asset securitization, were not impacted by shifts in bank capital requirements;
- One contradictory finding is that incentives to securitize are relatively inelastic with respect to bank capital requirements. Conversely, some authors argue that the adoption of Basel 1988 induced banks to seek out ways to remove capital-intensive loans from their books;
- The volume of activity in Canada's mortgage-backed securities market did not really accelerate until the implementation of Basel 1988 in 1991-1992. The second half of the 1990's saw an increase in alternative forms of asset-backed securities. Thus, capital requirements have impacted the development of Canadian mortgage and MBS markets.

General Market Impacts

Strength and stability of financial institutions

- US banks increased their exposure to market risk (interest rate, equity and currency risk) after the passage of Basel 1988, although they limited their interest rate risk exposure. Using an international sample of banks in 26 developed and developing countries, it was found that the profit margin on high risk loans is relatively small, suggesting that the additional costs and losses of these risky loans are not covered sufficiently by higher credit spreads;
- Basel 1988 induced Swiss banks to increase their capital levels over the 1989-1995 period, but not to decrease their risk exposure. This is attributed to the rigidity of the Swiss market in providing risk-sharing opportunities, as well as the relatively illiquid market for small banks' stock. Using confidential supervisory data for UK banks, it was demonstrated that the binding Basel 1988 capital requirements induced British banks to increase their capital positions. However, little evidence of a shift away from high risk-weighted loans in the UK was found;
- The banking system's response to risk-based capital requirements depends on the cost of recapitalization. The US banks tended to respond to Basel 1988 by decreasing risk exposure, whereas Swiss banks did not. It is argued this differential response is due to portfolio adjustments (in terms of shifting the risk of the bank's portfolio) being more costly in the less liquid Swiss market than in the US;
- Supporting the findings of the perverse risk-taking incentives in Basel 1988, some studies show that the implementation of Basel 1988 encouraged banks to switch from priced credit risk exposure to unpriced interest rate risk exposure. Therefore, it is unclear whether Basel 1988 increased or decreased the overall risk of the US banking sector since, although credit risk declined over the pre- to post-Basel 1988 period, interest rate risk increased;
- Basel 1988 has been successful in raising bank capital levels, but not necessarily in controlling bank insolvency risk. This is because Basel 1988 regulations are not tied to any chosen insolvency probability standard. Moreover, except for trading account activities, Basel 1988 does not adjust capital standards to reflect risk management techniques.

Allocation of capital

- The Basel 1988 capital requirements induced US banks to reduce the risks of their portfolios and resulted in shift away from loans and into government securities. This saw a decrease in total loans extended by US commercial banks of $150 billion in the years of Basel 1988 implementation. However, the question of whether this entire shift was indicative of a Basel-induced credit crunch is largely an empirical one;
- The shift in US bank portfolios during the period following the implementation of Basel 1988 was a result of the increased cost of raising capital. That is, the increased cost of issuing bank equity limited a capital-constrained bank's ability to comply with the new higher capital requirements. This resulted in banks increasing their capital ratio by decreasing the size of the loan portfolio and shifting into lower risk government securities with lower capital requirements. The impact of the Basel 1988 capital constraints therefore, was to reduce the risk of the banking sector, and to stunt the creation of credit in the US economy.

Cyclicality of the economy

- A number of authors find strong evidence of procyclicality in bank profitability and provisions for loan losses for an international sample of banks in 26 countries over the period 1979-1999. The evidence of procyclicality (increase in profitability and decreases in provisions for loan losses during economic upturns and vice versa) is more pronounced during the post-Basel 1988 period. Thus, the introduction of risk-based capital requirements appears to have exacerbated procyclical tendencies in banking. This evidence is also found in the credit ratings for 20 emerging market economies;
- There is also evidence of procyclical changes in capital requirements in the current regulatory regimes. Banks often experience declines (increases) in regulatory capital requirements during economic upturns (downturns), thereby exacerbating cyclical swings as capital-constrained banks cut down on lending during recessions and capital-rich banks increase lending during expansions.

Reshaping the playing field of financial institutions competing off-shore

- An international sample of banks was examined to distinguish between the impact of capital requirements and individual country-specific factors (Canada, Germany, Spain, France, Italy, Japan, the UK and the US over 1991-1993). Two opposing effects on capital levels where found:

  (1) a moral hazard effect (implying a positive relationship between bank risk and capital levels); and

  (2) a market rents effect (implying a negative relationship between bank risk and capital levels).
- The moral hazard effect dominates for banks in countries with strong safety nets, whereas in countries with more limited safety nets, the market rents effect dominates;
- Following the introduction of Basel 1988, the volatility of bank equity returns decreased across most European countries, except those that were undercapitalized relative to their risk exposure in the pre-Basel period. This finding is based on an examination of bank performance in Belgium, Denmark, Germany, Ireland, Italy, the Netherlands, Scandinavia, Switzerland and the UK over the 1980-1996 period;
- Country-to-country differences in accounting practices, stringency of provisioning for loan losses and recognition of non-performing loans undermines the goal of providing a level international bank regulatory playing field.

IMPLICATIONS OF THE BASEL CAPITAL ACCORD - PROGNOSIS FOR THE FUTURE

- The full impact of the Basel bank regulations will be reflected most in the area of risk exposure and risk management. Banks will have access to more sophisticated tools of risk measurement and management as they are developed. Basel 1988 has contributed to this process of development by creating regulatory incentives for banks to better document and control their risk taking.
- The impacts of Basel II will be felt mostly at the level of the most sophisticated, large, complex multinational banking organization. For the vast majority of banks, Basel II will be a non-event because it will be based on credit ratings which are typically unavailable for large numbers of bank borrowers. Unrated borrowers are granted the Basel 1988 capital requirement.
- The enhanced procyclicality built into Basel II will induce central bankers to devise more accurate tools to measure cyclical factors. This will improve the quality of financial and economic forecasting with broad implications for financial market activity, market transparency and efficiency of financial institutions.
- Mortgage markets, due to their susceptibility on local conditions, may present an area of vulnerability in the future. To the extent that Basel II proposals are not amended to remove some of the disincentives to securitization and credit enhancement, mortgage market innovation may be negatively impacted.
- Concern about the innovative flexibility in the mortgage market is most apparent in the security-driven mortgage market in the US. This has implications for Canada as some say Canada is following the US model with a time lag. Pass-through securitizations still dominate in Canada, although the transition to collateralized mortgage obligations (CMO) is just beginning to take hold.
- The Canadian mortgage market is deposit-financed. Canadian banks, and especially Canadian credit unions, tend to be liquid, so there is little need to securitize to improve liquidity. If a bank chooses to pursue the niche of low cost commodity mortgage provider, this could change the dynamics of Canadian mortgage market development. If the Basel 1988 disincentives attached to credit enhancements are removed in Basel II, there could be more innovation in the Canadian CMO market. This could fuel mortgage market efficiency and ultimately may reduce the cost of homeownership for many Canadians.

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Housing Research at CMHC

Under Part IX of the *National Housing Act*, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research.

This fact sheet is one of a series intended to inform you of the nature and scope of CMHC's research.

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